
Industry Views and Recommendations

Naval Interoperability Workshop

Sponsored by
National Defense Industrial Association/Department of the Navy
May 31, 2001
Alexandria, VA

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Discussion Topics - An Industry Perspective

- **Interoperability Definition**
- **Interoperability and The Future of Naval Warfare**
- **Cooperative Engagement Capability**
- **Current Interoperability Challenges**
- **Future Interoperability Focus**

What is Interoperability - An Industry Perspective

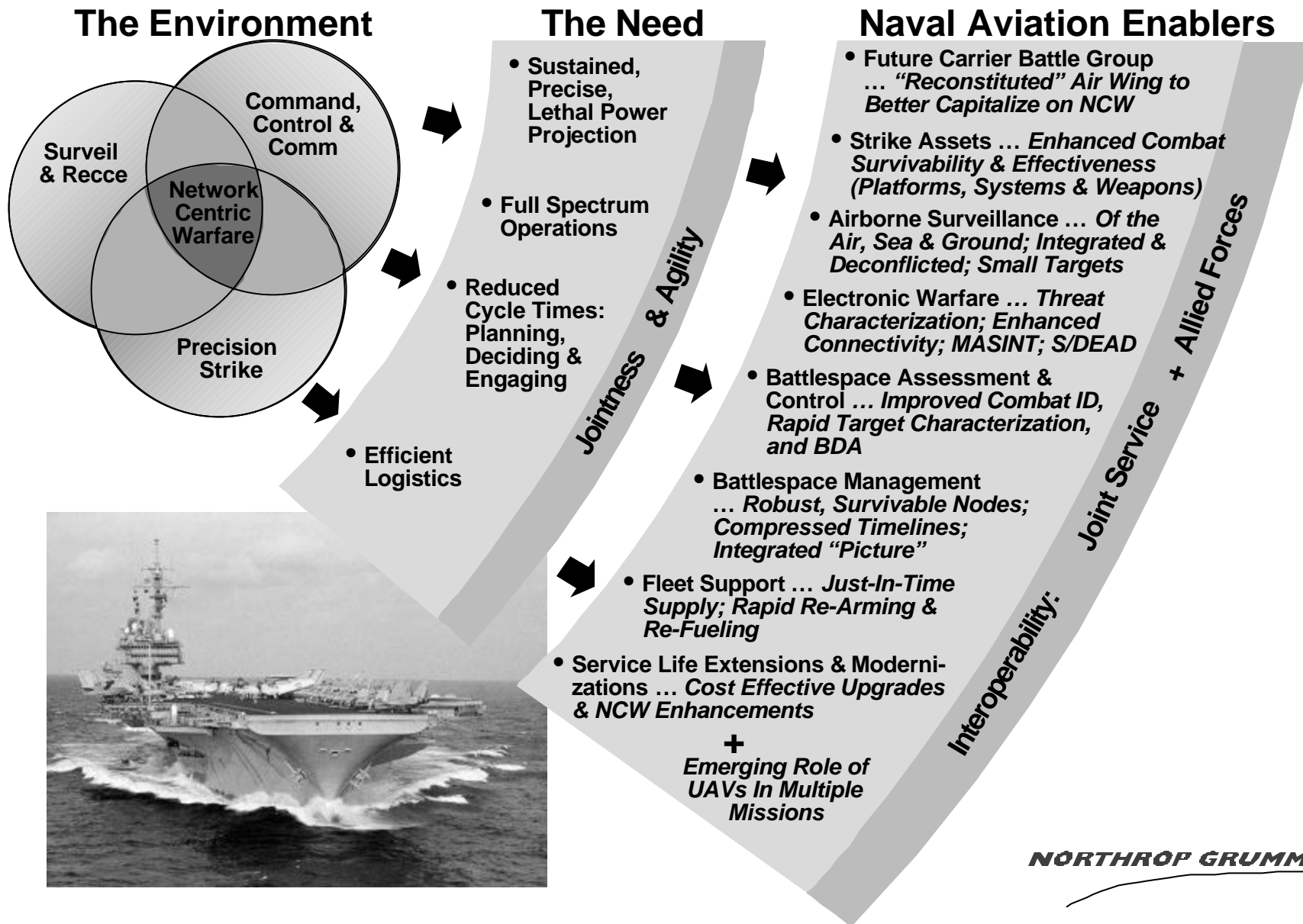
Four Basic Questions:

- **What Do I Know That Is Strategically or Tactically Important?**
- **Who Needs to Know That?**
- **What Strategic or Tactical Information Do I Need to Know?**
- **Who Can Tell Me That?**



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Interoperability As The Future of Naval Warfare



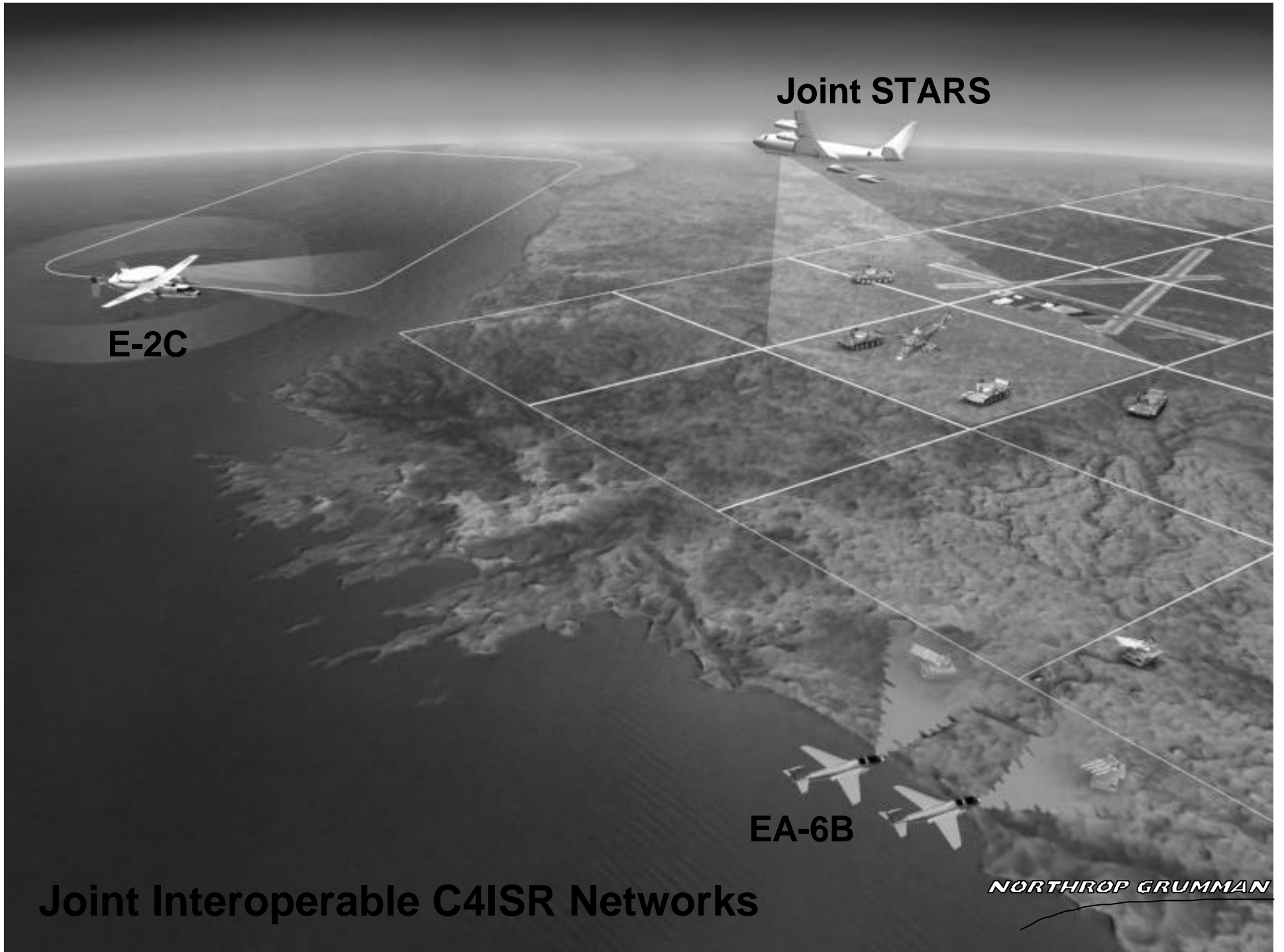
Joint STARS

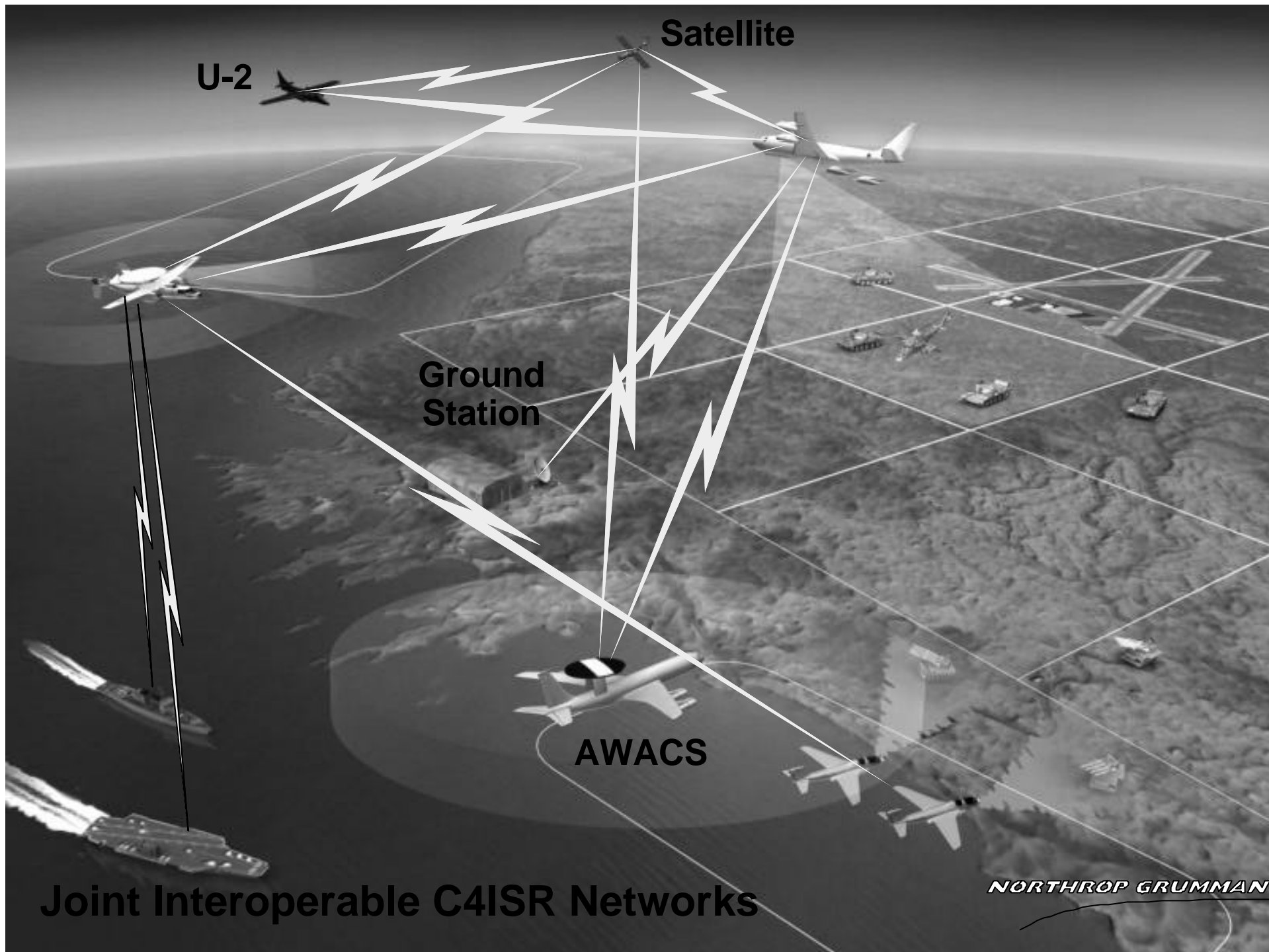
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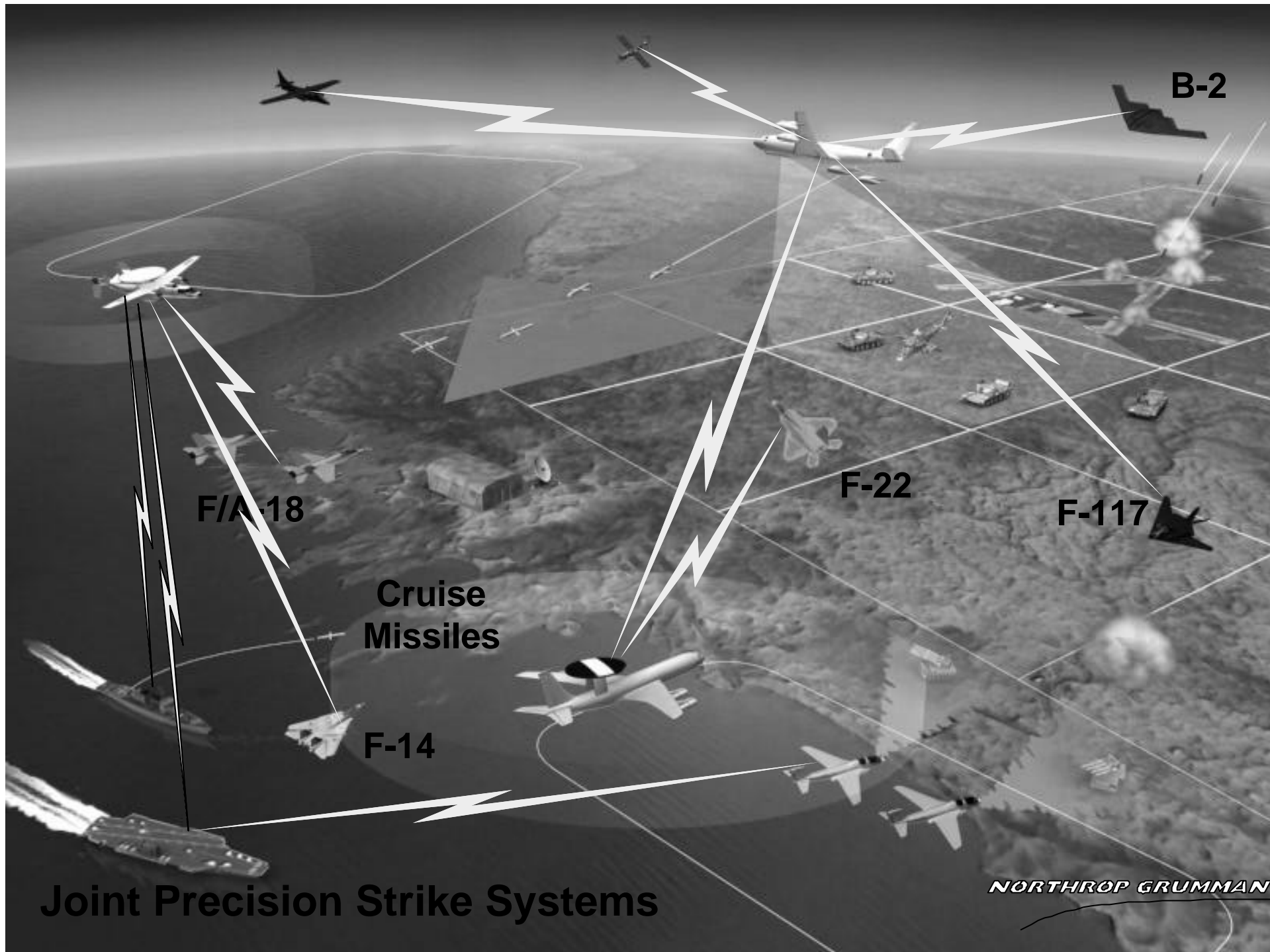
EA-6B

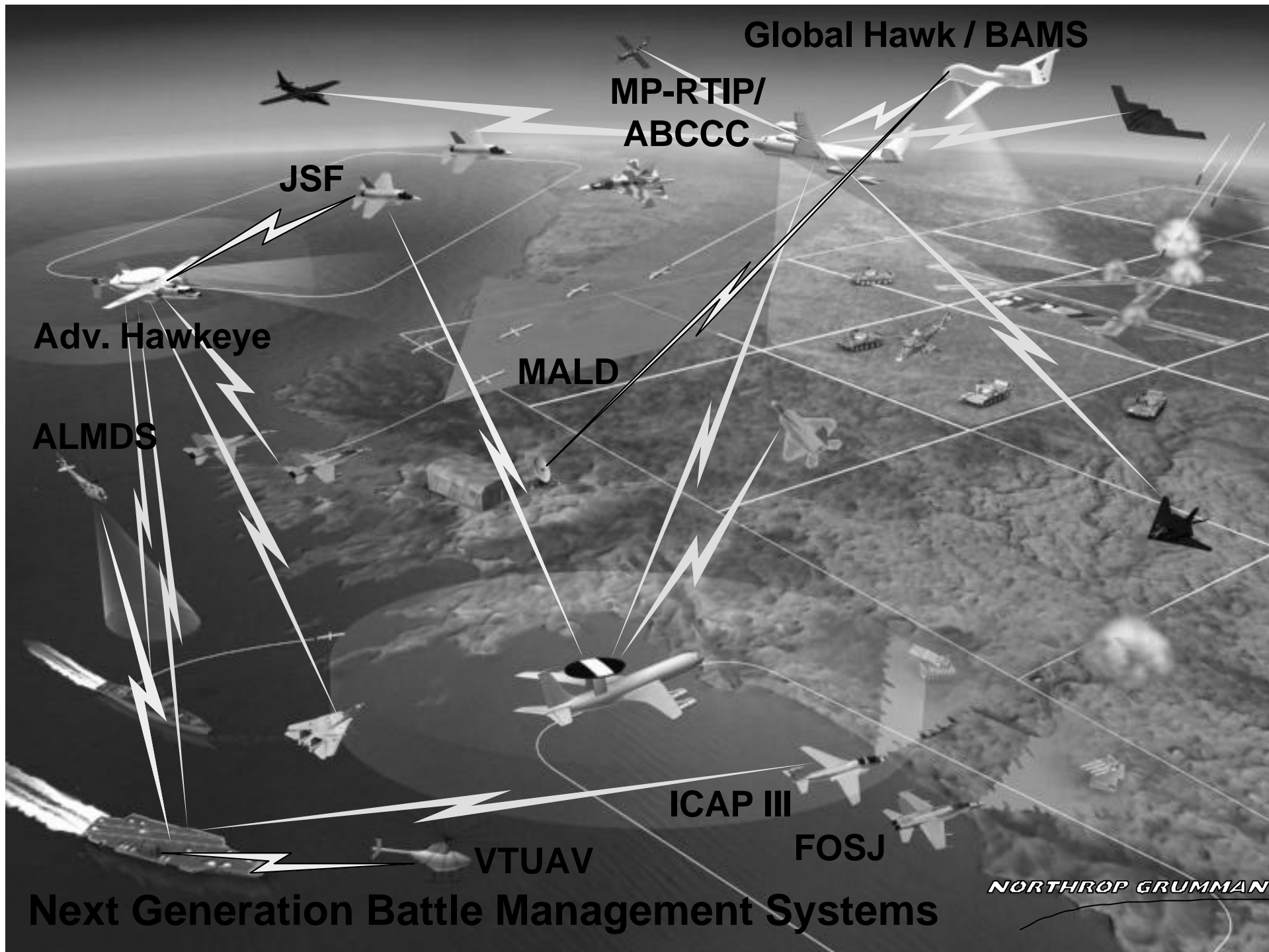
Joint Interoperable C4ISR Networks

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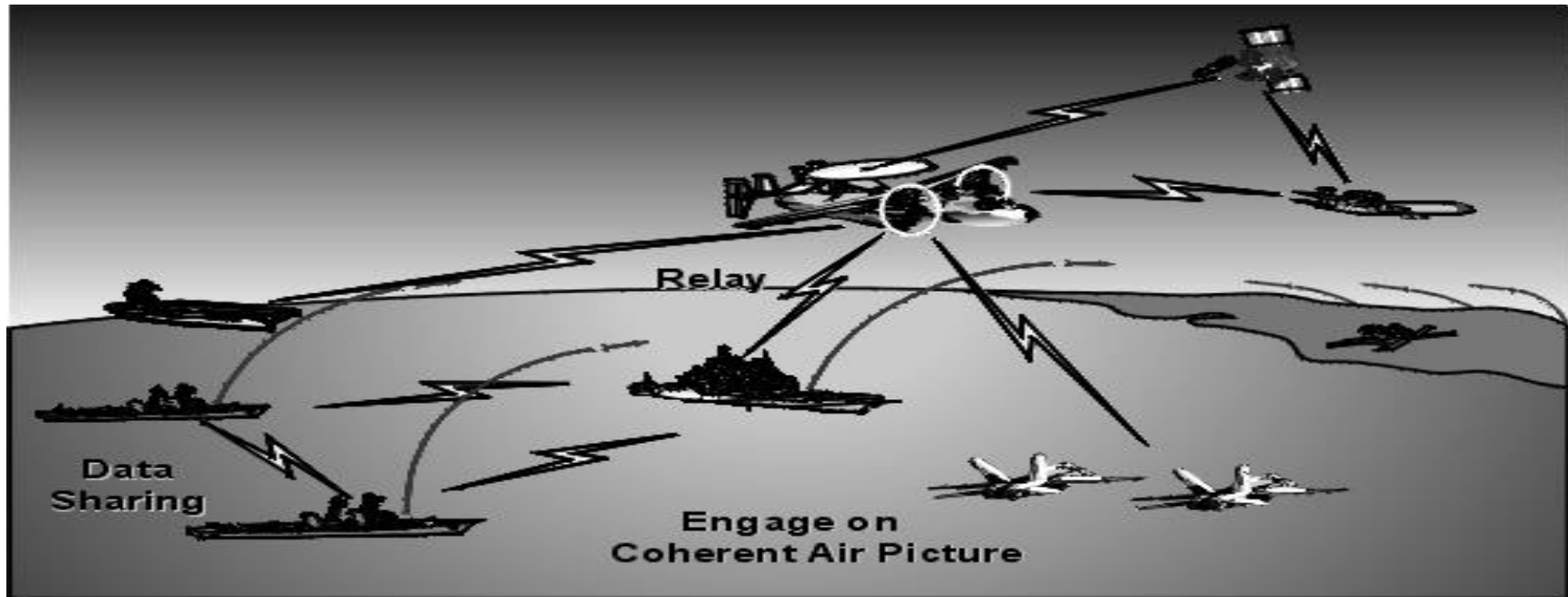




Integrated BM / C4ISR / Precision Strike Systems

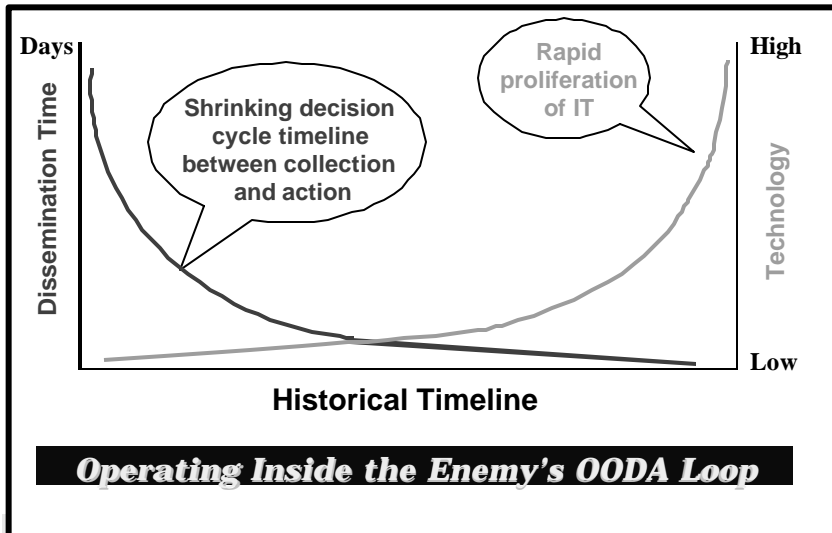
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Cooperative Engagement Capability (CEC)



- With Littoral Operations Need for Tactical Architecture Change:
 - Close Proximity of Joint Operating Forces.
 - Strong Need for Accurate and Timely Combat ID
 - ID Deconfliction Between Multiple ID Contributors
 - Battle Space Encroachment
 - Environmental Factors Such As Increased Clutter & Ducting
- Compressed Reaction Time For the Shooter

CEC and Benefits



- **Cooperative Engagement Capability (CEC) Between Aircraft and Ships Permits Shortened Timeline Between Data Collection and Action**
- **- Example of Current Interoperability Capability In US Navy**

- **Benefits**
 - **Common Identification Doctrine - Composite Identification**
 - **Improved Track Quality with Product of Combined Sensors**
 - **Very High Data Rate**
 - **Common Tracking Algorithms and Detection Data - Same Composite Picture**
 - **Jam Resistant**

Current Interoperability Challenges

- **Coordination Among Different Platforms and Integration Into Individual Weapon Systems**
 - **Competing Purposes (Tactical SA/Command & Control vs. Sensor Networking/Integrated Fire Control)**
 - **Potential Information Conflicts (Air Surveillance/ Combat ID via TADILS-A/J, Conventional Sources)**
- **Programmatics/Technology**
 - **Coalition/Allies/Joint/Service/Platform Integration**
 - **Operational Specs Evolution/Contracts**
 - **Bandwidth Technology & Hierarchical Transmission**
 - **Obsolescence, Legacy Systems, Spares**

Future Interoperability Focus

- **Processes for Operators to Utilize All Available Information**
- **Reliable Access to Best Information Sources**
- **Mission Roles Evolution**
- **Shift of Tactical/Strategic Responsibilities Into Network-Centric, Interoperable Environment**

Interoperability - Path To 21st Century Warfare

Naval / Joint
Battle Management /
C4ISR / Strike Systems



Platform Centric

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Interoperability - Path To 21st Century Warfare

Naval / Joint
Battle Management /
C4ISR / Strike Systems

Modifying / Linking
Assets to Improve
Interoperability

Designing New Systems
to Operate
Within SoS / NCW



- SATCOM
- CREWS
- Link16
- MP-RTIP
- Adv. Hawkeye
- CEC
- ICAP III
- LANTIRN
- SIGINT
- ELINT
- Precision Weapons
- GPS



ALMDS



FOSJ



MRE UAV



JAV



craft



CAV-N



MALD / MALI



Platform Centric

Network Centric

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Interoperability - Path To 21st Century Warfare

Naval / Joint
Battle Management /
C4ISR / Strike Systems

Modifying / Linking
Assets to Improve
Interoperability

Designing New Systems
to Operate
Within SoS / NCW

Developing Innovative CONOPS
To Approach
Integrated BM / C4ISR / Strike



Platform Centric

- SATCOM
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- Link16
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ALMDS

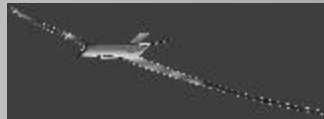


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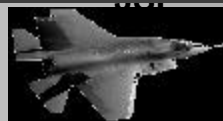
MRE UAV



JAV



craft

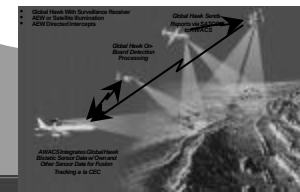


CAV-N

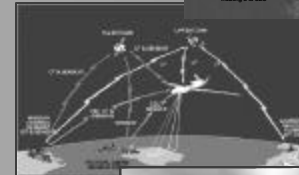


MALD / MALI

Network Centric

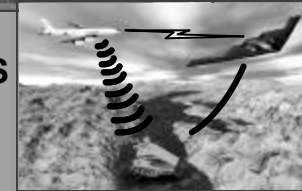


Advanced
AEW / TMD



ACN

GRS



UAVs



Littoral
Surveillance
& Targeting

Integrated BM / C4ISR / Strike
SoS Environment

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